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RUTGERS . THE STATE UNIVERSITY

INSTITUTE OF MICROBIOLOGY

September 16, 1957

NEW BRUNSWICK, NEW JERSEY

Dr. Joshua Lederberg
c/o Rubbo
Bacteriology Department
Melbourne University
Carlton N3, Vic., Australia

Dear Josh:

I found your note of August 22 after my return from California, where a rather dull Stanford meeting was spiced by the rumor of your moving to Berkeley. (However, I also heard statements to the contrary from Sonneborn and Levinthal). As far as the illustrations are concerned, we shall be glad to receive the prints after your return to Madison in November. Incidentally, I expect to be in Madison on November 20 and 21 if present plans and Joe Wilson's funds persist.

Among a number of slightly interesting breaks in our varied enterprises here is one that might be of particular interest to you: One of my graduate students, Jacob Michael, has ascertained in studies with Shigella dysenteriae and E. coli strains that there is an inverse correlation between penicillin resistance and resistance to bactericidal factors of normal human serum. This relationship was first detected by measuring penicillin resistance of strains selected for differences in serum resistance, and was confirmed by demonstrating that step-wise mutational increases in penicillin resistance are associated with corresponding decreases in serum resistance. (However, other serum-resistant mutants which do not show this relationship also have been observed.) To test the assumption that this may be the result of overproduction of cell wall components in penicillin-resistant mutants (to compensate for interference, which at the same time would offer more sites for interaction with serum bactericidins), the serum resistance of cells following pre-growth in the presence or absence of non-inhibitory concentrations of penicillin was tested. In accord with the above assumption, penicillin-grown cells proved more resistant to serum than their related controls pre-grown in plain broth. However, there was an interesting zone effect: pre-growth in 0.5 or 5 units protected against serum, pre-growth in 1 or 2 units did not (the actual units of course differ depending upon the strain employed). Also, the bactericidal effects of normal serum disappeared in the presence of 20% sucrose; cells thus treated and transferred into H_2O survived 100% whereas penicillin + sucrose-treated cells lyse after transfer to H_2O .

Barbara and I, minus the children, had an interesting time in California for 3 weeks, even though we confirmed that revisiting old-familiar places, after an interval of several years, can be a disappointing experience.

Dr. Joshua Lederberg

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With best regards to Esther and you,

Sincerely,

A handwritten signature in black ink, appearing to be 'W. Braun', with a stylized, cursive-like 'W' and a horizontal line extending to the right.

Werner Braun

WB:DP